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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
TRA, TUYEN Q	

ART UNIT	PAPER NUMBER
2873	

DATE MAILED: 11/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO 90C (Rev 10/03)

Office Action Summary	Application No.	Applicant(s)	
	10/050,865	OHTAKA ET AL.	
	Examiner	Art Unit	
	Tuyen Q Tra	2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 23 September 2004.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39,45-61,64-70,73-102,106 and 107* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-39,45-61,64-70,73-102,106 and 107* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 August 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Applicant's arguments with respect to claims 66-70, 83-102 and 107 have been considered but are moot in view of the new grounds of rejection. The indicated allowability of claims is withdrawn in view of the newly discovered reference(s) to Gelbart (6,147,789A), Saito et al. and Arney et al. and Rejections based on the newly cited references follow.

Drawings

1. Drawings filed on 8/24/2004 in this application are accepted by the Examiner.

Claim Objections

2. Claims 1, 45-48, 73, 82 and 107 objected to because of the following informalities: the examiner could not find term "random directions" as applicant stated in these claims. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims **73-81** are rejected under 35 U.S.C. 102(b) as being anticipated by Gelbart (U.S. Pat. 6,147,789A).

a) With respect to claim **73**, Gelbart discloses a micromachined reflective light valve in figure 2 wherein a fixed electrode (item 5), a beam (item 1) which is opposed to the fixed electrode (5) through a gap (as in Figure 1B) and which has a light reflection surface (item 2), and a light emission element (not shown); wherein the fixed electrode

(5), the beam (2), and the light emission element (not shown) are formed in a same package; the beam (1) is held to be deformable toward the fixed electrode (5) by an electrostatic force when the beam is driven by a driving voltage, a light emitted from the light emission element is reflected by the light reflection surface in different directions (Figure 1B shows reflected light in random direction when device is in ON state or driven state) when the beam is driven and in one direction (figure 1A shows reflected light in one direction or parallel when device is in OFF state) o when the beam is not driven, and the reflection light from the reflection surface is outputted to an outside of the package when the beam is driven or not driven (see figure below).

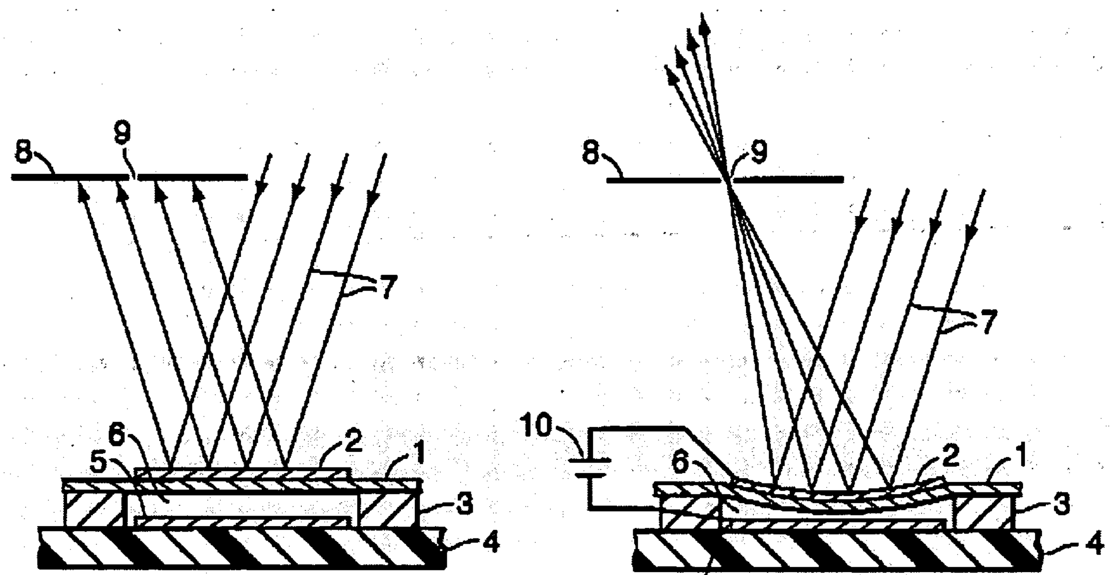

FIG. 1a FIG. 1b

b) With respect to claims **74-76**, Gelbart discloses wherein the beam is a both-end-fixed beam; wherein the light emission element is an electroluminescence element; wherein the fixed electrode and the beam are formed on a same substrate, and the light

emission element is formed on a package upper cover connected to the substrate while being opposed to the beam.

c) With respect to claims **77-79**, Gelbart discloses wherein a convex section which converges the light emitted from the light emission element on the beam, is formed on the package upper cover; wherein the fixed electrode, the beam an d the light emission element are formed on a same substrate, and a concave mirror, which converges the light emitted from the light emission element on the beam, is formed on a package upper cover connected to the substrate; wherein the fixed electrode, the beam and the light emission element are formed on a same substrate, and a waveguide path, which guides the light emitted from the light emission element into the gap, is formed in the substrate.

d) With respect to claims **80** and **81**, Gelbart discloses wherein a shielding film is formed on a package upper cover, and the light reflected by the light reflection surface on the beam is outputted to an outside of the package through a window provided in the shielding film; wherein the light emission element does not emit light while the beam is deformed.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims **1-39, 45, 47, 66-70, 82-102** and **107** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gelbart (U.S. Pat. 6,147,789A) in view of Furlani et al. (US Patent 5,793,519).

a) With respect to claims **1, 45** and **47**, Gelbart discloses a micromachined reflective light valve in figures 1A, 1B and 2 in a light reflection film (item 2) regularly reflecting incident light (item 7); a center beam (item 1) which is formed out of a thin film constituted to be combined with the light reflection film (2), which has both ends fixed, and which is configured to be deformed by an electrostatic force, wherein the reflection film (2) is provided on a first surface of the center beam; a substrate electrode (item 5) which is opposed to the center beam through a gap (item 6) formed on a second surface of the center beam; an opposed surface which is a surface of the substrate electrode opposed to the center beam modulating-the incident light on the light reflection film, the opposed surface restricting deformation of the center beam due to application of a driving voltage (item 10) to the substrate electrode (5) by abutting on the center beam; and the incident light (item 7) is reflected in different directions (Figure 1B shows reflected light in random direction when device is in ON state or driven state) when the beam is driven and in one direction (figure 1A shows reflected light in one direction or parallel when device is in OFF state) o when the beam is not driven, and the reflection light from the reflection surface is outputted to an outside of the package when the beam is driven or not driven (see figures 1A and 1B above). And further to claim 46, an independent driving unit which drives the plurality of light modulators independently of one anther.

However, Gelbart does not discloses a substrate which has concave session in which the substrate electrode having the opposed surface is formed and which holds a

to-be-held section of the center beam. Within the same field of endeavor, Furlani et al. discloses micromolded integrated ceramic light reflector with teaching of a substrate that is concave.

It would have been obvious, therefore, at the time the invention was made to a person having skill in the art to construct the MEM device with substrate (4) such as disclosed by Gelbart, and with a concaved substrate such as discloses by Furlani et al., for purpose of restricting the deformation of the center beam.

b) With respect to claim **2-17**, Gelbart further discloses wherein the light reflection film is formed out of a metallic thin film; wherein the center beam is formed out of a low resistance material; wherein the low resistance material of the center beam is formed by decreasing resistance of silicon by diffusing impurities into the silicon; wherein the center beam is formed out of a monocrystalline silicon film; wherein the center beam is formed out of a polycrystalline silicon film; wherein the center beam is formed out of a silicon nitride thin film; wherein two edges on the both ends, opposed each other, of the to-be-held section of the center beam are fixed to the substrate; wherein a distance between one edge and the other edge of the two edges on the both ends, opposed each other, of the center beam held by the substrate is fixed to be equal to or larger than a length of one of the one edge and the other edge of the two edges; wherein a plurality of light reflection films, a plurality of center beams and a plurality of substrate electrodes are arranged in a form of a one-dimensional array on the substrate; wherein a plurality of light reflection films, a plurality of center beams and a plurality of substrate electrodes are arranged in a form of a two-dimensional array on the substrate; wherein the opposed surface of the substrate electrode consists of a parallel opposed surface which is a parallel surface

opposed to the center beam; wherein the opposed surface of the substrate electrode consists of a partially non-parallel opposed surface which is a partially non-parallel surface opposed to the center beam; wherein the opposed surface of the substrate electrode consists of a plurality of non-parallel opposed surfaces which are non-parallel surfaces opposed to the center beam; wherein the opposed surface of the substrate electrode consists of an entirely non-parallel opposed surface which is an entirely non-parallel surface opposed to the center beam; wherein the substrate is made of a light transmission glass material; wherein the substrate is made of a monocrystalline silicon material.

c) With respect to claims **18-25**, Gelbart further discloses wherein a part of or all of a driving circuit is formed in the monocrystalline silicon material of the substrate; wherein the gap formed between the center beam held by the substrate and the substrate electrode opposed to the center beam and formed on the concave section of the substrate, consists of a non-parallel inclined surface; wherein the gap formed between the center beam and the substrate electrode opposed to the center beam and consisting of the non-parallel inclined surface, is shaped to be the largest in a central section of the center beam held by the substrate and to gradually enlarge from the two edges on the opposed both ends of the center beam toward the central section of the center beam; wherein the gap formed between the center beam and the substrate electrode opposed to the center beam and consisting of the non-parallel, inclined surface, is shaped to be the largest in a central section of the center beam held by the substrate and to gradually enlarge from the two edges on the opposed both ends of the center beam and other two edges of the center beam toward the central section of the center beam; wherein the gap formed between the

center beam and the substrate electrode opposed to the center beam and consisting of the non-parallel, inclined surface, is shaped to be the largest near one of the two edges on the opposed both ends of the center beam held by the substrate and to gradually enlarge from the other edge of the two edges on the opposed both ends of the center beam held by the substrate toward the one edge; wherein the gap formed between the center beam and the substrate electrode opposed to the center beam, consists of a non-parallel inclined surface between two edges on the both ends, opposed each other, of the center beam held by the substrate; wherein the gap formed between the center beam and the substrate electrode opposed to the center beam and consisting of the non-parallel inclined surface, is shaped to be the largest in a central section of the center beam held by the substrate and to gradually enlarge from the two edges on the opposed both ends of the center beam toward the central section of the center beam; wherein the gap formed between the center beam and the substrate electrode opposed to the center beam and consisting of the non-parallel inclined surface, is shaped to be the largest in a central section of the center beam held by the substrate and to gradually enlarge from the two edges on the opposed both ends of the center beam and other two edges of the center beam toward the central section of the center beam.

d) With respect to claims **26-39**, Gelbart further discloses wherein the gap formed between the center beam and the substrate electrode opposed to the center beam and consisting of the non-parallel inclined surface, is shaped to be the largest near one of the two edges on the opposed both ends of the center beam held by the substrate and to gradually enlarge from the other edge of the two edges on the opposed both ends of the center beam held by the substrate toward the one edge; wherein the to-

be-held section of the center beam held by the substrate consists of a plurality of divided to-be-held sections; wherein the divided to-be-held sections are arranged in a corner section of the center beam; wherein the divided to-be-held sections each has a connection section connected to the center beam having a smooth outline section; wherein the to-be-held section of the center beam held by the substrate consists of a folded structure section; wherein the to-be-held section of the center beam held by the substrate near a portion, in which a gap formed between at least the center beam and the substrate electrode opposed to the center beam and consisting of a non-parallel inclined surface has a largest clearance, consists of a plurality of divided to-be-held sections; wherein the to-be-held section of the center beam held by the substrate near a portion, in which a gap formed between at least the center beam and the substrate electrode opposed to the center beam and consisting of a non-parallel inclined surface has a largest clearance, consists of a folded structure section; wherein the center beam consists of a member having a tensile stress; wherein combinations of thicknesses (t) of a plurality of members constituted to be combined with the center beam and stresses (δ) including a tensile stress with a plus sign and a compressive stress with a minus sign are $(t_1, \delta_1), (t_2, \delta_2) \ldots (t_n, \delta_n)$, the center beam satisfies $(t_1.\delta_1) + (t_2.\delta_2) + \ldots + (t_n.\delta_n) / (t_1 + t_2 + \ldots + t_n) = 0$; wherein the center beam has a relationship of (t/1).sup.2=s/E with respect to a tensile stress (s), a thickness (t), Young's modulus(E) of a formation material, a distance (1) between one edge and the other edge of two edges on the both ends, opposed each other, of the center beam; wherein all of or a part of a driving circuit driving the center beam is formed on the substrate; wherein the center beam is abutted

on a surface of the substrate and deformed along a clearance shape of a gap formed on the other surface of the center beam by the electronic force generated by the application of the driving voltage to a portion between the center beam and the substrate electrode; wherein after the center beam is deformed by the electronic force generated by the application of the driving voltage to a portion between the center beam and the substrate electrode, a voltage opposite in polarity to the driving voltage is applied to the portion between the center beam and the substrate electrode to an extent not to deform the center beam; wherein the center beam is deformed by alternately applying, as the driving voltage, a positive voltage and a negative voltage to a portion between the center beam and the substrate electrode with reference to a potential of the center beam.

e) With respect to claim **66**, Gelbart discloses a micromachined reflective light valve in figures 1A, 1B and 2 in a light reflection film (item 2) regularly reflecting incident light (item 7); a center beam (item 1) which is formed out of a thin film constituted to be combined with the light reflection film (2), which has both ends fixed, and which is configured to be deformed by an electrostatic force, wherein the reflection film (2) is provided on a first surface of the center beam; a substrate electrode (item 5) which is opposed to the center beam through a gap (item 6) formed on a second surface of the center beam; an opposed surface which is a surface of the substrate electrode opposed to the center beam modulating-the incident light on the light reflection film, the opposed surface restricting deformation of the center beam due to application of a driving voltage (item 10) to the substrate electrode (5) by abutting on the center beam.

However, Gelbart does not discloses the gap is a non-parallel gap. Within the same field of endeavor, Furlani et al. discloses micromolded integrated ceramic light reflector with teaching of a non-parallel gap in Fig. 2.

It would have been obvious, therefore, at the time the invention was made to a person having skill in the art to construct the MEM device with a gap such as disclosed by Gelbart, and with a non-parallel gap such as discloses by Furlani et al., for purpose of restricting the deformation of the center beam.

f) With respect to claims **67-70**, Gelbart further discloses wherein the beam is a both-end-fixed beam having both ends fixed to the upper surface of the substrate, the fixed both ends of the beam being generally L-shaped; wherein a support proximate to a fixed end of the beam to assist in recovery of the beam when the electrostatic force acting on the beam is released; wherein the support is made of a material equal to a material of the beam; wherein the beam consists of a film having a tensile residual stress.

g) With respect to claim **82**, Gelbart discloses a micromachined reflective light valve in figures 1A, 1B and 2 comprising of a reflection unit which regularly reflects the incident light; a thin film both-end-fixed beam (item 1) which is formed out of a thin film (item 2) constituted to be combined with reflection unit, which has both ends fixed into substrate, and which is configured to be deformed by an electrostatic force, the light reflection unit provided on one surface of the thin film both-end-fixed beam (1); a substrate electrode (item 5) which is opposed to a second surface of the thin film, both-end-fixed beam, and which applies a driving voltage (item 10); a gap (item 6) which is formed by opposing the substrate electrode (5) to the thin film both-end-fixed beam (2); a substrate (4) which has the substrate electrode (5) formed in a bottom of the gap, and

which holds both ends of the thin film at both-end-fixed beam, the incident light is reflected by the reflection unit in different directions (Figure 1B shows reflected light in random direction when device is in ON state or driven state) when the thin film is driven by the driving voltage and the incident light is reflected in one direction (figure 1A shows reflected light in one direction or parallel when device is in OFF state) when the thin film is not driven.

However, Gelbart does not discloses a cover member which is formed to be attached onto the substrate, which includes the thin film, both-end-fixed beam and the gap in a vacuum space, and which is made of a light transmission material.

Since the cover member does not change the characteristic of the output, the use of cover member in the device is consider to be design choice. Therefore, it would have been obvious at the time the invention was made to a person having skill in the art to add cover mean into such optical system for protecting and mounting purposes.

h) With respect to claims **83-88**, Gelbart further discloses wherein thin film, both-end beam is made of a monocrystalline silicon thin film; wherein the thin film, both-end beam is made of a polycrystalline silicon thin film; wherein the thin film, both-end beam is made of an amorphous silicon thin film; wherein the thin film, both-end beam is made of a silicon nitride thin film; wherein the thin film, both-end beam is made of a metallic thin film; wherein the gap which is formed by opposing the substrate electrode to the thin film, both-end-fixed beam, is non-parallel.

k) With respect to claims **89-95**, Gelbart further discloses wherein a part of or all of the thin film, both-end beam is abutted on a bottom of the gap formed on the substrate when the thin film, both-end beam is deformed by an electronic force which is generated

when the substrate electrodes applies the driving voltage; wherein the substrate is made of monocrystalline silicon; wherein the substrate is made of optical glass; wherein the substrate is made of a transparent conductive film; wherein the cover member is made of a glass material; wherein a getter material is formed in the vacuum space formed by the substrate and the cover member; wherein an attachment section which attaches the substrate to the cover member, consists of a metallic seal layer.

l) With respect to claims **96-102**, Gelbart further discloses wherein a difference in coefficient of thermal expansion between the cover member and the substrate is not more than 0 to 30%; wherein the cover member has at least one of a lens, an anti-reflection film and a shielding film formed in a path of the incident light on the reflection unit; wherein the cover member has at least one of a lens, an anti-reflection film and a shielding film formed in a path of reflection light from the reflection unit; wherein the cover member comprises an engraved section formed in an attachment section attached to the substrate; wherein the thin film, both-end-fixed beam formed on the substrate is hexagonal-shaped; wherein a plurality of light modulators are arranged in a form of one of a one-dimensional array and a two-dimensional array; wherein the plurality of light modulators are arranged in a staggered fashion in the form of one of the one-dimensional array and the two-dimensional array.

m) With respect to claim **107**, Gelbart further discloses a light switching unit which comprises a light modulator, the light modulator modulating light by changing a reflection direction of an incident light, and comprising: a reflection unit which regularly reflects the incident light; a thin film both-end-fixed beam which is formed out of a thin film constituted to be combined with the reflection unit, which has both ends fixed, and

which is configured to be deformed by an electrostatic force, the light reflection unit provided on a first surface of the thin film, both-end-fixed beam; a substrate electrode which is opposed to a second surface of the thin film both-end-fixed beam, and which applies a driving voltage, a gap which is formed by opposing the substrate electrode to the thin film both-end-fixed beam, a substrate which has the substrate electrode formed in a bottom of the gap, and which holds both ends of the thin film, both-end-fixed beam, wherein the incident light is reflected by the reflection unit in different directions (Figure 1B shows reflected light in random direction when device is in ON state or driven state) when the thin film is driven by the driving voltage and the incident light is reflected in one direction (figure 1A shows reflected light in one direction or parallel when device is in OFF state) when the thin film is not driven; and a projection screen displaying the image projected by the light modulator of the light switching unit.

However, Gelbart does not discloses a cover member which is formed to be attached onto the substrate, which includes the thin film, both-end-fixed beam and the gap in a vacuum space, and which is made of a light transmission material.

Since the cover member does not change the characteristic of the output, the use of cover member in the device is consider to be design choice. Therefore, it would have been obvious at the time the invention was made to a person having skill in the art to add cover mean into such optical system for protecting and mounting purposes.

7. Claims **48-61** and **65** is rejected under 35 U.S.C. 103(a) as being unpatentable over Gelbart (U.S. Pat. 6,147,789A) in view of Furlani et al. (US Patent 5,793,519) and further in view of Arney et al. (U.S. Patent 5,751,469).

a) With respect to claims 48 and 65, the teaching of Gelbart in view of Furlina et al. are described with reference to claim 45 above. However, Gelbart in view of Furlina et al. do not discloses a hole section which is formed in the thin film both-end-fixed beam above the gap. Within the same field of endeavor, Arney et al. discloses a method and apparatus for an improved micromechanical modulator with teaching of a hole section which is formed in the thin film both-end-fixed beam above the gap.

It would have been obvious, therefore, at the time the invention was made to a person having skill in the art to construct the MEM device with reflective film (2) such as disclosed by Gelbart in view of Furlina et al., and further with a hole section which is formed in the thin film both-end-fixed beam above the gap such as discloses by Arney et al., for purpose of making a section of the thin film both-end-fixed beam corresponding to the hole section to deform more easily than remaining sections of the hole section.

b) With respect to claims 49-61, Gelbart in view of Furlina et al. further discloses wherein the reflection unit is made of a metallic thin film; wherein the thin film, both-end-fixed beam is made of monocrystalline silicon; wherein the thin film, both-end-fixed beam is made of polycrystalline silicon; wherein the thin film, both-end-fixed beam is made of silicon nitride; wherein the gap is non-parallel between the thin film, both-end-fixed beam and the substrate electrode; wherein the gap has an apex angle section on a substrate electrode-side bottom; wherein the hole section is rectangular; wherein the hole section is circular; wherein a plurality of the hole sections are arranged in a direction equal to a tangential direction of a fixed end of the thin film, both-end-fixed beam; wherein a plurality of the hole sections are arranged in a direction perpendicular to a tangential direction of a fixed end of the thin film, both-end-fixed beam; wherein the hole

section is arranged so that one of a long diameter direction and a long edge direction is equal to a tangential direction of a fixed end of the thin film, both-end-fixed beam; wherein the hole section is arranged at an opposed position near an apex angle section of the gap; wherein the reflection unit is arranged at a position of the hole section in contact with an edge.

8. Claims **46, 64** and **106** is rejected under 35 U.S.C. 103(a) as being unpatentable over Gelbart (U.S. Pat. 6,147,789A) in view of Furlani et al. (US Patent 5,793,519) and further in view of Arney et al. (US Patent 5,751,469A), and further in view of Saito et al. (US Patent 6,272,304 B1).

The teachings of Gelbart in view of Furlina et al. are described with reference to claim 45 above. However, Gelbart in view of Furlina et al. do not discloses a hole section which is formed in the thin film both-end-fixed beam above the gap. Within the same field of endeavor, Arney et al. discloses a method and apparatus for an improved micromechanical modulator with teaching of a hole section which is formed in the thin film both-end-fixed beam above the gap.

It would have been obvious, therefore, at the time the invention was made to a person having skill in the art to construct the MEM device with reflective film (2) such as disclosed by Gelbart in view of Furlina et al., and further with a hole section which is formed in the thin film both-end-fixed beam above the gap such as discloses by Arney et al., for purpose of and making a section of the thin film both-end-fixed beam corresponding to the hole section to deform more easily than remaining sections of the hole section.

The teaching of Gelbart , Furlina et al. in view Arney et al. are described above. However, Gelbart, Furlina et al. and Arney et al. do not teach or suggest a latent image formation unit, a development unit and a transfer unit. Within the same field of endeavor, Saito et al. discloses an image forming apparatus with high release characteristic of a toner image with teaching of an image carrier, a latent image formation unit, a development unit and a transfer unit.

It would have been obvious, therefore, at the time the invention was made to a person having skill in the art to construct the MEM device with reflective film (2) such as disclosed by Gelbart and Furlina et al. in view of Arney et al., and further an image carrier, a latent image formation unit, a development unit and a transfer unit such as discloses by Saito et al., for purpose of forming image.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuyen Tra whose telephone number is (703) 306-5712. The examiner can normally be reached on Monday to Thursday from 8:30am to 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps, can be reached on (703) 308-4883. The fax number for this Group is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

tt

November 14, 2004